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(12) (19) (CA) **Brevet-Patent**

(11) (21) (C) **2,174,824**
(22) 1996/04/23
(43) 1996/10/25
(45) 1998/10/20

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(51) Int.Cl.[6] A21D 13/00, A23L 1/307, A23L 1/164
(30) 1995/04/24 (08/427,446) US

(54) **FARCES AU PAIN EXEMPTES DE MATIERES GRASSES ET METHODE D'OBTENTION**

(54) **FAT-FREE BREAD STUFFS AND PROCESS THEREFORE**

(57) Cette invention concerne des pâtes à pain, en particulier des pâtes à tortilla, où l'amidon remplace les graisses ou huiles pour donner un produit sans gras de haute qualité.

(57) This invention pertains to bread stuffs, particularly tortillas, wherein starch is utilized in place of fats or oils, to obtain a high-quality fat-free product.

SPECIFICATION

(Case No. 93,962)

FAT-FREE BREAD STUFFS AND PROCESS THEREFORE

BACKGROUND OF THE INVENTION

As health and fitness awareness increases, further scrutiny is given to calories consumed. Resultantly, consumers continue to look for low-fat and fat-free foods. However, consumers are often unwilling to sacrifice taste, quality, texture and other organoleptic characteristics simply to obtain a low-fat or fat-free product.

Food manufacturers have continually attempted to meet the consumer demand for high quality, low-fat and fat-free products. Providing high quality, fat-free products has been particularly difficult in the baking industry, because fat plays an important role in the taste and texture of finished baked goods. Too often, using fat replacers or fat mimetic compounds sacrifices some of the quality characteristics of the baked good. To avoid quality problems, food manufacturers sometimes resort to complex formula manipulations. These complex formulas may be more costly than conventional formulations and also may present unanticipated problems. Therefore, the baking industry continues to search for simple, viable formulations that yield high quality low-fat and fat-free products.

It is the object of this invention to provide a fat-free bread stuff and process therefore, particularly directed toward a tortilla, that possesses taste, quality and texture attributes similar to fat-containing bread stuffs, without necessitating complex formulation changes.

DETAILED DESCRIPTION OF THE INVENTION

The present invention is directed to a formulation to provide low-fat or fat-free bread stuffs, particularly tortillas, with acceptable organoleptic attributes. In the search for fat-free bread stuffs, especially tortillas, it has typically been found that using a normal formulation for fat-containing bread stuffs and simply substituting particular ingredients to reduce the fat content has not produced products with acceptable taste, quality and texture characteristics. Thus, complex formulation changes were often attempted.

This invention provides high quality bread stuffs, especially tortillas, without any complex formulation changes. The unexpected results of this invention are demonstrated by its sheer simplicity, in light of the complex formulations prevalent in the field.

Specifically, this invention comprises simply utilizing starch in lieu of oils or other fats. Replacing the fat and oil containing ingredients with starch significantly reduces the fat content of the finished product such that the product meets the standardized definition for fat-free products. That is, the products have no more than 0.5 grams of fat per serving size or per reference amount, whichever is larger. The following are some illustrative reference amounts: tortillas, 55 grams; breads, rolls, muffins and English muffins, 50 grams; and biscuits, croissants and bagels, 55 grams.

Tortillas and other bread stuffs made pursuant to this invention possess comparable organoleptic characteristics of like fat containing products, including opacity, flexibility, lubricity, mouth feel, taste, tenderness and shelf life. The added starch component of this invention tenderizes the dough and provides the perception of fat. In many instances, the added starch may impart a creamy, fat-like quality to the bread stuff, which is often lacking in fat-free products. Further, the physical characteristics of the starch may help in reducing the stickiness of the

dough, a role usually filled by fat containing components; thus yielding a dough that is suitable for handling in commercial applications.

Most starches, obtained from a wide variety of sources, will be suitable for use in this invention. For example, starches such as potato, wheat, rice, corn, oat, rye and pea may be used in this invention. Further, various types of starches may be used including treated, untreated, modified, unmodified and hydrolyzed. It is contemplated that the above starches are only illustrative, and not exhaustive, of the starches that may be utilized in this invention. The use of other starches may be obvious to those of ordinary skill in the art, upon reading this specification, depending upon the specific formula used, and any other nutritional or quality objectives

It has been found that, pursuant to this invention, formulas utilizing as little as 2% starch will be effective in providing a fat-free product. However, formulas containing at least 4% starch appear to be the most effective. That is, products having at least 4% starch are the easiest to handle in industrial applications and may have somewhat better organoleptic properties than those having lesser amounts of starch. The effective maximum starch content appears to be approximately 70%. The precise amount of starch required for each product (between the parameters of 2% and 70%) will depend upon a variety of factors including, but not limited to, the particular products, the product quality sought and varying economic factors. In light of this specification, the amount of starch needed for each application (between the parameters of 2% and 70%) will be obvious to those skilled in the art.

Some other fat-free formulations that have attempted to avoid complex formulation changes utilize significant amounts of water and fiber. Typically, those formulas yield a dough with a moisture content greater than 50%. However, those formulations are only able to obtain a fat-free product by sacrificing quality characteristics such as mouth feel and shelf life.

When bread stuffs are prepared wherein starch is simply substituted for fats and oils, the finished product is unlike anything currently available in that it is a low-fat or fat-free product with organoleptic characteristics that are similar to fat-containing products, and are obtained without any complex formulation changes. Thus, the tortillas and other bread stuffs of this invention are highly desired by consumers and food manufacturers alike.

PREFERRED EMBODIMENT

In the preferred embodiment, this invention is applied to making a fat-free tortilla, having quality characteristics that are as good or better than fat containing tortillas. The typical fat content of a commercially available tortilla is 4 grams per 55 gram serving. In order to be classified as low-fat, a tortilla may contain no more than 3 grams of fat per 55 gram serving. To be classified as no fat, a tortilla may contain no more than 0.5 grams of fat per 55 gram serving. In accordance with the above standards, tortillas prepared utilizing this invention contain less than 0.5 grams of fat per 55 gram serving.

The examples below show how, pursuant to this invention, a typical fat-containing tortilla formula is modified to yield a fat-free tortilla. The formula modification involves simply substituting starch for vegetable oil.

EXAMPLES

In example A below, tortillas were prepared using a control formula. Then, in example B, the test formula, unmodified potato starch was substituted into the control formula for vegetable oil. All other ingredients and conditions remained constant. The tortillas produced in the test formula were compared against those produced in the control formula.

The quality of the control formula tortillas was as expected for a normally formulated tortilla. Surprisingly, the quality of the test formula tortilla was actually superior to the control formula. Particularly important was that, unlike other fat-free formulations, the test formula tortillas were as tender and as moist as the control formula tortillas.

Example A

Ingredients	Batch (g)	Dough Formula %	Tortilla % fat
flour	294.540	58.712	0.968
ambient water	167.725	33.433	0.000
salt	5.993	1.195	0.000
double-acting baking powder	5.000	0.997	0.000
vegetable oil	26.636	5.309	5.379
Potassium sorbate	1.199	0.239	0.000
Fumaric acid	0.580	0.116	0.000
	500.000	100.000	6.348

Procedure:
Dry mix ingredients for 1 minute.
Add water and oil; mix to optimum.
21.49 gram dough ball.
Sheet or press to 6 inches.
Bake as normal.

Example B

Ingredients	Batch (g)	Dough Formula %	Tortilla % fat
flour	294.540	58.712	0.968
ambient water	167.725	33.433	0.000
unmodified potato starch	26.636	5.309	0.001
salt	5.993	1.195	0.000
double-acting baking powder	5.000	0.997	0.000
Potassium sorbate	1.199	0.239	0.000
Fumaric acid	0.580	0.116	0.000
	500.000	100.000	0.969

Procedure:
Dry mix ingredients for 1 minute.
Add water; mix to optimum.
21.49 gram dough ball.
Sheet or press to 6 inches.
Bake as normal.

WHAT IS CLAIMED IS:

1. A fat-free bread stuff having at least 2% starch.

2. The fat-free bread stuff of claim 1, having at least 4% starch.

3. The fat-free bread stuff of claims 1 or 2, wherein the starch is selected from the group consisting of: potato starch, wheat starch, rice starch, corn starch, oat starch, rye starch and pea starch.

4. The fat-free bread stuff of claims 1, 2 or 3, wherein the dough of said bread stuff has a moisture content of less than 50%.

5. The fat-free bread stuff of claims 1, 2, 3 or 4, wherein said bread stuff is a tortilla.

6. A process for producing a fat-free bread stuff, wherein starch is utilized in said bread stuff in an amount of at least 2%.

7. The process of claim 6, wherein the starch is selected from the group consisting of: potato starch, wheat starch, rice starch, corn starch, oat starch, rye starch and pea starch.

8. The process of claims 6 or 7, wherein the dough of said bread stuff has a moisture content of less than 50%.

9. The process of claims 6, 7 or 8, wherein said bread stuff is a tortilla.

10. A low-fat bread stuff having at least 2% starch.

11. The low-fat bread stuff of claim 10, having at least 4% starch.

12. The low-fat bread stuff of claims 10 or 11, wherein the starch is selected from the group consisting of: potato starch, wheat starch, rice starch, corn starch, oat starch, rye 5starch and pea starch.

13. The low-fat bread stuff of claims 10, 11 or 12, wherein the dough of said bread stuff has a moisture content less than 50%.

14. The low-fat bread stuff of claims 10, 11, 12 or 13, wherein said bread stuff is a tortilla.

10 15. A process for producing a low-fat bread stuff, wherein starch is utilized in said bread stuff in an amount of at least 2%.

16. The process of claim 15, wherein the starch is selected from the group consisting of: potato starch, wheat starch, rice starch, corn starch, oat starch, rye starch and pea starch.

15 17. The process of claims 15 or 16, wherein the dough of said bread stuff has a moisture content of less than 50%.

18. The process of claims 15, 16 or 17, wherein said bread stuff is a tortilla.

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